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THE MEDICAL SCHOOL AS PART OF THE UNIVERSITY[1]

IN our educational systems, as in most of the complex institutions of human origin, the changes that are constantly occurring do not seem to follow a course of continuous symmetrical development. The manner of growth appears to resemble rather that process of exuviation with which we have been made familiar in the life history of the humble crab and his crustacean relatives. That is to say, at certain more or less regular periods our systems become enveloped in a case of customs and traditions of shelly consistency, which, while it serves as a protection toward dangers from without, afflicts greviously by and by the growing parts within. In the end the increasing pressure becomes distressing or painful and the only way out of the predicament is to moult the old shell and grow as fast as possible before a new one takes its place. The system of education in medicine has in fact been undergoing a moult for some years past and what I have in mind to-day is to call attention to the fact, perhaps already sufficiently obvious, that the process is not entirely completed. While certain parts of the system are free from the old constricting influences and are at liberty to grow and expand in proportion to the measure of vitality with which they are endowed, other parts are still encased in ancient shell which serves as an obstacle to their proper development.

During the last twenty years especially medical education and the condition of medicine in general in this country have been the subjects of much earnest discussion. Critics within and without the pro-

[1] Annual address in Medicine, Yale University.

fession have exposed its weaknesses in the merciless way appropriate to their rôle, and reformers have cried aloud its deficiencies from the house-tops. One naturally inquires what is the cause of all this stir? What has happened to create such dissatisfaction with a system that formerly was accepted without comment? The ills and accidents which afflict mankind are not greater or more numerous than in former times. The pestilence still walks in darkness and destruction wastes at noonday as of old, but not more so. Indeed we flatter ourselves that we are better off than our ancestors in these regards. But we take a different attitude toward them. Our forefathers did what they could to escape these ills and in biblical phrase sought to their physicians with more or less satisfactory results. But what they could not avoid or prevent they accepted submissively as an act of God, a phrase which some one has defined in comprehensive manner as including all those acts which no reasonable man can foresee. In these latter days, on the contrary, there is a wide-spread feeling that man should be able to apply his intelligence so as to reach a more satisfactory understanding and control of disease and pestilence. The reason for this change of attitude toward nature is to be found, without doubt, in the great increase in our scientific knowledge. Physics, chemistry and biology have added immensely to our comprehension of the processes of nature, living as well as dead, and this acquisition has awakened in us a keen desire to apply all this knowledge practically in saving ourselves as far as may be from sickness and death. If we can find out the secrets of the stars and bend the forces of nature to our use and pleasure, can we not also unravel to some extent those mysteries of life and death which after all are the phenomena of paramount importance to us in this universe in which we find ourselves placed. This same desire to apply scientific knowledge to practical medicine was apparent in Europe early in the nineteenth century. Investigations of the laws controlling inanimate nature had spread rapidly to a similar study of the properties of living matter, although the transition was attended by some convulsive qualms among the timid and superstitious. Foolish and ineffectual attempts were made to discourage the bold pioneers by charges of impiety or by predictions of the necessary futility of all efforts to solve such great mysteries. In medicine, especially, this kind of opposition was very common, and the enlightened members of the profession contended against many unnecessary difficulties in their efforts to introduce the methods and results of science into the practise of medicine. Our own country was very slow in feeling the effect of this movement. We are all aware that medical education and therefore medical practise in this country, speaking in general terms, were until recent years far below the standard maintained in Europe. Conditions among us, in fact, were such that for a time things went from bad to worse. Our curve of efficiency kept falling, while in other civilized lands it rose more or less parallel with the growth in scientific knowledge. There thus came to us a certain distinct and admitted inferiority in medical matters which has not yet been fully overcome. Many excuses and reasons might be offered for the backwardness of our development in medicine, but the excuse most frequently made was and is that our growing country has need in the outlying districts for an inferior type of physician willing to work hard for little pay, and consequently entitled to receive his degree in medicine at little expense of time or money. A need of this kind undoubtedly existed, but it scarcely justified

the creation of the numerous poor schools with which this country was afflicted, and whose ill-prepared graduates practised in the centers of population as well as in the outposts of civilization. One can not entirely suppress the suspicion that motives of personal gain and commercial expediency were largely responsible for the deplorable condition that prevailed in the latter half of the nineteenth century. A few schools possessed of good traditions made an earnest fight for better things under very adverse circumstances, and we must recognize that among the graduates of the poorer schools there were some who became able and even famous practitioners. I venture to believe that this latter result was in no way due to the system, but is to be explained by the fact that the profession of medicine will always draw to itself a considerable number of able and high-minded men, who are bound to make themselves felt upon whatever system their education may be conducted. But the general output of medical graduates was for a time far inferior in quality to that supplied to other nations. What else could be expected from a system which permitted, indeed actively encouraged, men to enter the medical school without any previous education and then qualified them to practise upon the public after a bare ten or twelve months' study of the science and art of medicine? It was much easier at one time to enter the profession of medicine than to become a recognized journeyman in a trade. The conditions indeed became bad enough to call urgently for reform, and this call has grown increasingly imperative down to the present day. In a democratic country like ours a reform in a system of education is naturally a slow process. Under a more centralized form of government it is only necessary to convince the few who have authority and the desired reform may be inaugurated promptly and effectively. But with us it is requisite to arouse the people at large. If an improvement is called for it can only be established permanently by creating an enlightened public opinion in its favor. It happens therefore in medicine as in politics that the country gets about the kind of service that the majority thinks it wants, and progressive leaders have a very hard time in making that majority change its ideas. Certainly in medicine the effort for reform has been a long and laborious one, but we may feel sure that now the tide of public opinion has turned in favor of a better system. A necessary preliminary step was the development of an appreciation of science in this country. Fortunately our colleges and universities have made splendid progress in this respect. They have created a scientific atmosphere, they have let loose among us a scientific spirit which has entered like a ferment into the medical schools. There, like a ferment, it has caused much commotion and unrest of a healthy and normal kind, the end-result of which will be no doubt the establishment of a system of medical training as good at least as that found in other countries of the same grade of civilization. It may be interesting to inquire how far we have advanced toward this desirable end; and in what direction our present tendencies are taking us. The positive results of the agitation begun during the present generation are important and satisfactory. Our schools, if we take them all into account, are still so heterogeneous that it is scarcely possible to make any general statements that shall be equally applicable to all, but we have an increasing number of strong schools which are setting the pace for the rest, and those that can not keep up will have to drop out of the race altogether. According to reports thirty schools surrendered to this fate

during the past five years. The better schools, which we need alone consider in this matter of the status of our development, are organized, almost without exception, as the medical department of a university. Herein lies the secret of their success and the promise of their improvement in the future. In these schools there is firmly established a four years' graded course, of which the first two years are devoted largely to the preparatory medical sciences of anatomy, physiology and pathology, using these terms in their broad sense to include such subjects as histology, physiological chemistry, pharmacology, etc. The most significant fact, however, is that these preparatory sciences are taught by specialists who give their entire time to the work, and whose methods and ideals differ in no essential respect from those followed by teachers of physics, chemistry and biology. In other words, the instruction in these medical sciences has been raised to the university level, as has been the case now for so many years in the German schools. The change in the character of the instruction in these subjects has brought it about that in many of our colleges and universities they are accepted as appropriate courses for academic degrees, a recognition which I believe will soon become general. For when properly taught a course in anatomy, physiology or pathology gives a liberal education and a mental training which are of value to any man, whatever may be his career in after-life. These subjects deal with the great problems of existence, the riddles of life and death and propagation, and all the properties of that extraordinary substance which we call living matter; they throw light not only on the special questions that interest the physician, but they furnish also valuable material for the practical use of the sociologist, the political scientist, the philanthropist and the statesman. Moreover, they bring us close to the highest and most difficult subject that the human mind is called upon to contemplate, that is to say, the relationship between ourselves and the material universe, the ever-fascinating and mysterious interdependence of mind and matter. Much has been said upon the subject of the cultural value of liberal studies as opposed to so-called professional or technical studies, but in all discussions of this kind there is a tendency toward a certain arbitrary assumption that courses of studies must fall wholly under one or the other of these rubrics, whereas common experience teaches us that merely putting a label upon a thing is no guaranty that the contents are thereby properly described. The preparatory training for life should be liberal and humanizing, but it is quite possible that many different lines of study may lend themselves with equal success to the development of these qualities, and it will be admitted perhaps by every one that the courses of study in college, in addition to having a broadening influence upon the student, should also inculcate in him some specific kind of mental training which will fit him better to take a high rank in whatever career he may happen to select.

The term technical, as applied to courses of instruction, has acquired an unfortunate connotation which implies that they are lacking in value from the standpoint of general training. As a matter of fact, many of the graduate courses given in our universities are quite as technical as those given in the preparatory sciences in the medical school, and for one as for the other it is short-sighted to assume that they are devoid of a general educational value. I prefer much the definition of the term technical which has been given by Professor Karl Pearson. He makes a distinction between technical and professional instruc-

tion, or, to use his precise terms, between technical education and professional instruction. Under the latter term he includes training in the art of a specific profession—that kind of training which the apprentice gets from his master in the specialized methods and handicraft peculiar to the vocation—the kind of training which, in the case of the physician, is obtained in the wards and clinics in contact with patients. By technical education, on the other hand, he means that training in the underlying subjects of a profession which makes for the development and strengthening of the mental faculties. The technical education of the physician in this sense lies in the physical and natural sciences, including under the latter term the whole range of the biological sciences. Whether any given course in this category meets Pearson's definition of technical education is determined by asking whether it "provides mental training for the man who has no intention of professional pursuits." Judged by this standard, we may understand that it is the method in which a science is taught as much as its contents which determines whether or not it has value as an intellectual preparation for life. I have no doubt that various subjects, scientific or otherwise, are taught at times within the walls of the universities in such a way that they miss the larger end and confer only the restricted benefit of a special knowledge which is truly professional for that subject. There can be, however, no hesitation in claiming that the subjects of anatomy, physiology and pathology as they are taught or should be taught in our best medical schools are adapted to give a training to the mind as broadening and as generally beneficial as courses in physics, chemistry, biology or indeed as any of our university courses which deal with special departments of human knowledge. So far as graduate instruction is concerned this contention has long been admitted in this country, and the subjects we are considering are listed upon the programs of study in both the philosophical and the medical faculties. In later years many colleges have gone a step farther and have accepted these courses as part of a general scientific training for those students who are looking forward to a career in medicine. It is perhaps only a matter of a little time before they will be admitted to the same standing in all respects as the other sciences, that is to say they will be considered not only as subjects of special medical interest, but as conveying knowledge of the widest human interest and importance. So far as the subjects themselves are concerned they enjoy their widest opportunity and best environment when the medical school forms an integral part of the university, not only in organization, but in location as well. If it so happens that geographically the medical school is separated from the rest of the university it is not a matter of vital importance, so far as I can see, in which set of buildings these subjects are taught, provided only the teachers are of the right sort. This opinion, I am glad to say, is merely by way of confirmation of the practise that is actually coming to be established among us. When these subjects are segregated with the clinical branches something, no doubt, of the university atmosphere is lacking; when they are separated from the clinical side there is a corresponding loss of medical atmosphere. Which is the more serious loss, or whether there is any material difference in the final result, it is difficult to say. The medical student probably values more highly the medical surroundings. They give significance to the things that he is learning and in various informal ways they furnish him with op-

portunities to acquire the points of view and the methods of practical medicine. On the other hand, they have the disadvantage of distracting and diverting some students from a thorough study of the preparatory sciences. I have had frequent occasion to observe this effect. Some of our medical students chafe under this prolonged preparation, forgetting the fact that it is an opportunity which may never come to them again, and forgetting also that it gives them the badge, the impress that will differentiate them from the mere empiric, when the time comes for them to compete with their fellow practitioners. To the teachers, on the contrary, particularly if they belong to the productive type, the university atmosphere is perhaps more stimulating. The methods and ideals of these teachers are more closely related to those of the university professors than to those of their clinical colleagues. For while research is valued as much perhaps in the medical department as in the philosophical department, there is the difference that in medical circles the reward of immediate appreciation goes chiefly to those investigations that promise to have a direct practical application. The medical atmosphere encourages research by the sharp stimulus of an abundant reward for practical results. The university spirit or the academic spirit, on the other hand, takes the wider and wiser view that looks beyond the immediately useful to the large results that may be expected from a growth of knowledge in general. This serener atmosphere forms a grateful environment for research, and in the long run no doubt it produces the larger harvest of useful knowledge. Investigation after all is always a voluntary offering. There is no way of compelling it or of estimating its value in terms of time or quantity, and men who investigate do not like to be put under the pressure of demonstrating that the work they do is of immediate importance to mankind. They prefer to study those problems which for one reason or another have aroused their interest. Considering the complexity of nature, especially the living side of nature, and remembering how difficult, even dangerous, it is to apply knowledge that is incomplete, the rest of mankind would do well to encourage in every way the little band of investigators whose chief ambition and pleasure in life is simply to add to our store of knowledge. As a matter of fact mankind generally does not place a very high estimate on the work of these disinterested individuals whose labors contribute to the common good rather than to personal gain, although history teaches us in an infinite number of ways that on the work of such men depends in large measure the possibility of progress. Perhaps the explanation lies in the fact that the good these men do comes after them, it benefits posterity rather than the present generation, and we are inclined to let posterity do the appreciating as well as the benefiting. But this is a line of thought aside from our present purpose. The conclusion that I wish to emphasize is simply that all the agitation that has been going on in medical circles during the past two decades has resulted finally in the establishment of two reforms in medical education. First, the preliminary training for entrance upon the medical career has been greatly increased. Starting with practically nothing at all, it was raised first to a common-school education, then to a high-school education and finally, in the university schools, to a college preparation, partial or complete. Second, in the medical course itself the work of the first two years has been so arranged that it continues the traditions and methods of the university in the study of the so-called underlying

medical sciences. It will be observed that these two important results have to do with the preparation for practical medical work. On the old system two years were given to acquiring a sufficient knowledge of the art of medicine. As scientific knowledge increased and penetrated into medicine the period of instruction was prolonged to four years, or taking into account all of the necessary preparation, to six or eight years, but all of this additional time was devoted substantially to preliminary or preparatory training. This is a significant fact. All of the truly art side of medicine or of any other profession may be acquired on the apprenticeship system, without any previous preparation other than is implied in a basis of general intelligence. It is the scientific side of medicine which calls for all of this extensive preliminary training. Without it one might still in a two years' course make a capable practitioner, to use a distinction made long ago by Magendie, but not a scientific physician. The difference between an able practitioner and a scientifically trained physician is not so striking that it can be appreciated at once by the public at large. The difference is there, however, and eventually it means everything to the advancement of medicine to recognize this difference and to increase it by every means at our command, whatever cost of time and money it may entail. Excellence is generally the thing that costs. If by the expenditure of more money we can add a knot or two to the speed of our steamships we know that it pays us to do so, and if by longer and more expensive training the efficiency of the physician may be increased a little, the difference is worth the cost, for it also will add much to the happiness and prosperity of the whole community.

The content of the curriculum of our first two years, and the character of the instruction given during that period, may be modified more or less from time to time. It may be expanded or more probably it may be simplified, but it seems to me that our system of medical instruction in this country is committed definitively to the general principle that these medical sciences shall be taught as the other sciences in the university are taught, by specialists who give their entire time to the work and who are active in research as well as in instruction. The force of successful example will compel all schools to follow this type. But, we may ask, is there no change that is desirable in the system of instruction in the clinical branches? This is a question which ought to be discussed by clinicians as by those who know whereof they speak. But it is a general truth, perhaps, that reforms in teaching do not usually originate from those occupying the positions in which changes are called for. Feelings of personal interest or loyalty to traditions prevent them from seeing clearly the defects that may be obvious to others. It comes about, therefore, that the initial impulse to reform is often forced upon us by criticism from without. In regard to the teaching of the clinical subjects in our medical schools three general changes have been suggested at one time or another and are likely to come up for serious consideration in the immediate future. First, shall the time devoted to these subjects, under the auspices of the medical school, be lengthened? At present the usual plan is to give two years to this side, and the definite suggestion made is that a third, exclusively hospital year, shall be added. I shall not stop to discuss this question. Our graduates themselves realize the value of this additional experience and in increasing numbers every year they are seeking a term of service in the hospitals before entering upon private practise. It seems to

me most probable that we shall find it advantageous to follow in this respect the example set for us by the older countries, that is to add a year of hospital service as an obligatory part of the requirements for the degree in medicine or for the license to practise medicine. As we all know, this change has been strongly recommended by the council on education of the American Medical Association. Second, there is much complaint from many sources, particularly from the teachers of the medical sciences, that the professors of the clinical subjects do not make adequate use of the results and methods of science in their instruction. What is the use of giving the student a scientific training if the man who instructs him in diagnosis and treatment neglects to show wherein this knowledge is applicable? This is largely a matter of comparison. We know that in foreign countries the clinical teacher is usually well prepared to use the results of science. In our own country, outside some anatomy, normal and pathological, this statement can not be made. Our best clinicians heretofore have been lacking in acquaintance with the facts and methods of the underlying experimental sciences. This, however, is a defect which time no doubt will remedy. The newer appointments to these chairs will be made from a group of men who have enjoyed the benefits of a better scientific preparation. It would, however, be a real advance if we should adopt what seems to be a practise in other countries, namely, to require those who expect to take positions upon the medical or surgical staffs to serve a preliminary year or two in a scientific laboratory, engaged upon research not too immediately practical in character. The suggestion made by Dr. Bevan that the positions upon the clinical staff might be filled by men who had served as instructors in anatomy, physiology or pathology is most excellent. If this procedure became customary, if the professor of medicine, for example, selected his assistants from the teaching staff of the departments of physiology, physiological chemistry and pathology we should have an arrangement which, on the one hand, would supply the clinical departments with well-trained men, capable of undertaking independent investigations, and, on the other hand, would probably direct toward the laboratory subjects an abundant supply of young medical graduates, whereas under present conditions it is frequently necessary to go outside medicine in filling such positions. Third, What shall be the character of the duties and qualifications expected from those who have the chief direction of the work in the clinical departments? It is an interesting and somewhat surprising fact that in this part of our system of medical education no change of importance has been made in the methods of teaching during the last few decades. So far as the student himself is concerned no fundamental change in opportunities is required. Clinical instruction from the students' standpoint always had the great merit that it employs what we may call the laboratory method, as opposed to the method of learning from books. The student is brought face to face with experiments made by nature and he is given an opportunity to learn from personal experience rather than from the experience of others. In our modern schools his opportunities of this kind have been greatly increased and to this extent his instruction has been improved in his clinical years along the same line as in his preparatory years. But has there been a development in the methods of teaching in these clinical years corresponding to that which has taken place in the laboratory subjects? What we find is that the backbone of the instruction in the clin-

ical branches consists now, as formerly, of exercises in the clinics and operating rooms of the hospital and the dispensary, and these exercises are conducted by practitioners of medicine who devote a little time to their duties as teachers, but give most of their time and energy to their private interests. As long as our medical schools were private corporations founded partly for the public good, but partly also for the personal advancement of the members of the corporation, this division of time was natural and permissible. But our best schools are no longer private enterprises; they constitute a part of a university whose functions are solely to advance the public good and not in any sense to exploit private interests. As has been well said by one who speaks with great authority, the university discharges its direct duties to the public in two general ways, by teaching and by investigating; by providing systematic instruction in all forms of that knowledge which has been accumulating from the beginning of our race, and by promoting all good methods for increasing knowledge. These duties are performed through her teachers. She therefore selects her professors for their ability to teach and to investigate, and to insure that these functions are performed in the best possible way they are required to devote themselves entirely to her service. In this respect, as we know, the professors in the clinical branches, and possibly also the professors in some of the other professional schools, are on a different plane from the university professor proper. It is an interesting, and it seems to me a perfectly proper question to ask whether this distinction is a necessary and advantageous one. Does it constitute an inherent characteristic of professional instruction? This is a somewhat delicate and complex question which should be discussed not simply from the standpoint of the ideal, but also with reference to what is really feasible under conditions as they exist. Time does not permit such a discussion and I must limit myself to a brief statement of what seem to me to be the tendencies now developing. One curious, if not important, phase I may note in passing, namely the practise that seems to be growing of paying the clinical professor the full salary given to the other professors in the university. The professor in the clinical subjects is designated as a professor in the university, and although he is permitted to engage in a lucrative private business he is given a salary as large as that paid to the usual professor who devotes his entire time to his university duties. There is a manifest inequity in this practise, and it produces a distinct feeling of discontent among the teachers. It would seem to me that the university ought not to submit to this condition, unless it is actually forced to do so to obtain the men that it wants. As a matter of fact the indirect benefits attached to these positions in a good university school are so great that I believe there would never be difficulty in obtaining the best men to fill them whether they carried a salary or not. But if a salary is attached it should certainly not be so large, under present conditions, as that paid to other university professors, otherwise the university deliberately places a premium on the teaching done by the clinical instructors which tends to discredit the work of the other teachers. But this is a more or less incidental matter. The really important standpoint from which to view the subject is what are the means by which the university, through its medical department, can discharge most efficiently its obligations to the community. It wants to send out practitioners of medicine qualified in the best possible way to treat the sick, it

wants to do its part in throwing additional light upon the causes and treatment of disease. Now the first of these functions is not so very difficult of performance. Under conditions as they are teachers of medicine and surgery can be obtained who will give to students the best methods of diagnosis and treatment, and so far as the limited time permits will send them out into the world prepared to develop into competent practitioners of medicine. There can be no doubt, however, that this function would be performed more satisfactorily from the standpoint of the school if an arrangement could be made whereby the professors gave more time to the work of instruction. But the provisions made for the advancement of knowledge by investigation are not so satisfactory as they should be. Whatever may be the position of a proprietary school in this particular, the university school surely can not be satisfied with playing the part of a mere reflector of knowledge. The spirit of investigation is wide-spread in medicine at the present day. We have the highest kinds of hope that the methods of science may be applied with success to the study of diseases of all kind. There has been an extraordinary increase in our knowledge of infectious diseases, and resulting therefrom a really wonderful improvement in our control of the conditions threatening public and private health. All this we owe directly to the use of the laboratory method of investigation. A similar victory may be gained over the numerous constitutional and nutritional diseases whose causes are at present hidden in the secrets of the body metabolism, but to accomplish this desirable end, or at least to accelerate its accomplishment, we must organize more satisfactorily our means of investigation. Shall we limit our investigations to the laboratories of the medical sciences and to special institutes, or shall we extend them into the clinical branches? It is almost useless to put such a question. Investigation by experimental methods has spread into the clinical departments, and a great increase in the development of this phase of research activity may be regarded as inevitable. The point that has been raised and which I should like to emphasize is that our present system is not well adapted to promote this kind of work. Our custom is to appoint as heads of these departments men who are engaged in the practise of medicine, and it is perfectly evident that if these men give themselves unreservedly to the demands of practise their efficiency as teachers and investigators will be seriously impaired, indeed, in the latter particular, will probably be destroyed altogether. To attain the combination of those qualities which are most desirable from the view-point of the university one of two changes should be made. Either there should be a definite limitation placed on the time given to outside practise, so that opportunity of a known extent may remain for teaching and research, or these positions should be placed squarely on a university basis, the practise of the incumbents being limited to the hospital and dispensary and the laboratories attached to them. The two propositions bear to each other somewhat the relation of a half loaf to a whole loaf. Neither of these principles is in force today, so far as I know, in any of our better schools. Investigations that bear directly on the problems of practical medicine are carried on in the laboratories of the medical sciences, in the special institutes, and by the younger men in the clinical departments who are preparing themselves for higher positions. We possess also a certain small number of professors of medicine and surgery who, in spite of abundant opportunities offered to enlarge their incomes,

are so deeply interested in the work of investigation that they voluntarily limit their outside practise and devote a considerable portion of their time and energy to genuine research. These are noble spirits, for they make a real sacrifice for the sake of a worthy principle. Medicine owes much to them not only for results actually obtained, but also for their example and influence which permeate the whole department with which they are connected, and influence favorably to some extent every student brought into contact with them. But the number of such men is very small, for I would not add to this honor list those whose names appear sometimes in our literature as contributors, but who are in reality patrons of research rather than actual workers. The position of our clinical professors in relation to their duties toward the school, on the one hand, and their opportunities for increasing their private practise, on the other, is so similar to that which formerly existed in the departments of the medical sciences that one naturally assumes a similar outcome. The practitioner was displaced from the chairs of anatomy, physiology and pathology, because the scientific knowledge and laboratory technique had become so specialized that it was impossible for the man in practise to do the professorial work with honor and success. The principle of competition between the schools soon determined which kind of professor was most needed. In the same way precisely science and laboratory technique and the spirit of investigation are pushing hard into the clinical branches. The professor of medicine who gives himself to outside practise, and at the same time attempts to keep up with the scientific development of his subject and to make and direct the investigations which his position in a good school demands is putting himself under a great strain at present, and the indications are that soon this strain will become too great. Specialists will be demanded for the heads of our practical branches as they are now for our theoretical branches. It seems quite possible that here again the principle of competition will be the decisive factor. The university school which shall first establish departments on this basis may, and in my opinion will, secure both reputation and students as compared with schools organized on the present system. Whether a professor of medicine, surgery, obstetrics, etc., whose practise upon patients is limited to the hospital and dispensary will be as well qualified as the man with an extensive outside practise to teach his students medical art as well as medical science, and to attain the proper influence among his brother physicians are questions that have been somewhat discussed, but the only way to find out the correct answers is to try the experiment. All the theoretical reasons favor such a change. The practise of the hospital is much more rigorous than private practise from the standpoint of the acquisition of the methods of diagnosis and treatment. I fancy that any physician will admit that experience and real knowledge accumulate at a rapid rate in the hospital as compared with the results of the looser discipline of outside practise. A man whose diagnoses are based upon the most complete examinations possible and whose errors are continually subject to the salutary correctives of autopsy and pathological demonstration is likely to make a very exact and practical teacher. As regards the matter of the relation of these men to the medical public there can be no room for a difference of opinion. It is they who would have the golden opportunity to acquire precise knowledge, to keep thoroughly abreast of the latest and best in the medical world. It is they who in medical societies and

medical journals would be best qualified to speak with full knowledge, and in professional circles knowledge gives authority whatever may be the case with the public at large. A practical difficulty in making such a change in the character of the appointments to the clinical chairs, which interests the university authorities directly, is the doubt whether properly prepared men would be willing to surrender the rewards and popular appreciation that are attached to the career of a successful physician. This is again the kind of question that discussion does not throw much light upon. When we meet with difficulties of this kind in laboratory work we put the matter to the test of experiment and thereby settle the dispute. Our country is in a peculiarly favorable position to make such an experiment. Our system of medical education has heretofore simply developed along lines laid down by the experience of foreign countries; perhaps in the direction suggested above we may have an opportunity to take the lead instead of trailing along in the rear. I have had occasions to talk with a number of young clinicians on this topic and I have arrived at the conviction that many of them would eagerly accept an offer which, while assuring them a modest but sufficient competence, would also open to them a career so promising in influence, reputation and possibilities for doing the highest good to mankind.

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THE WINNIPEG MEETING OF THE BRITISH ASSOCIATION[1]

On Wednesday, August 25, the British Association for the Advancement of Science will meet for the third time in the Dominion of Canada. Twenty-five years ago the first Canadian meeting of the association was held in Montreal. Thirteen years later, in 1897, advancing a stage further westwards, the association met in Toronto. This year the place of meeting will be Winnipeg, the Gateway City, as it has been called, of the Canadian northwest.

The growing frequency of these flights of the British Association to the dominions beyond the seas will be realized when it is remembered that in the interval since the meeting in Toronto the association has paid a visit (in 1905) to British South Africa. The Montreal meeting in 1884, which initiated the extension of the British Association's meeting-grounds to places outside the British Isles, was not decided on without many heartburnings. For over half a century, since its establishment in 1831, the association had always held its annual meeting in one of the ancient seats of learning or one of the centers of modern industry and commerce in the mother country; and the proposal that it should depart from this custom excited much opposition from those who were wedded to the old order of things. The proposal was first mooted at the jubilee meeting of the association at York in 1881, when Captain Bedford Pim gave notice of his intention to move at the meeting of the following year "that the British Association do meet in Canada in 1885." In Canada itself this proposal was taken up with the greatest heartiness; and before the end of the year the Marquis of Lorne, then Governor-General of Canada, wrote to Mr. William Spottiswoode, as president of the Royal Society, giving an invitation to the association to meet in the dominion in 1883. Various circumstances prevented the council of the association from accepting this invitation, whereupon a further invitation was sent to the association to meet at Montreal in 1884. With a view to testing the feeling of members of the general committee with regard to a proposal which undoubtedly involved a serious departure from the accepted policy of the association, a circular letter was issued inquiring how many members of the committee would be able to accept the Canadian invitation. Only 230 out of 700 members of the general committee re-

[1] The London *Times*.